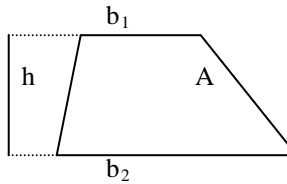


## Area: Area of trapezoids

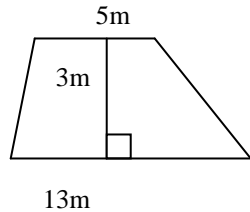
A *trapezoid* is a plane figure with two parallel sides of length  $b_1$  and  $b_2$  (base1 and base2) and another two sides connecting  $b_1$  to  $b_2$ . We call the perpendicular distance between  $b_1$  and  $b_2$  the height ( $h$ ).

The area of a trapezoid is given by the formula:

$$A = \frac{1}{2}h(b_1 + b_2)$$



Ex. Find the area of the following trapezoid.



$$\begin{aligned} A &= \left(\frac{1}{2}\right)(h)(b_1 + b_2) = \\ &= \left(\frac{1}{2}\right)(3\text{m})(5\text{m} + 13\text{m}) = \\ &= \left(\frac{1}{2}\right)(3\text{m})(18\text{m}) = \\ &= 27\text{m}^2 \end{aligned}$$

**Exercises:** Given the figure and formula above, find the missing quantity.

- 1.)  $h = 1\text{m}$ ,  $b_1 = 2\text{m}$ ,  $b_2 = 4\text{m}$ ,  $A = ?$
- 2.)  $h = 2\text{cm}$ ,  $b_1 = 3\text{cm}$ ,  $b_2 = 7\text{cm}$ ,  $A = ?$
- 3.)  $h = 3\text{in}$ ,  $b_1 = 5\text{in}$ ,  $b_2 = 9\text{in}$ ,  $A = ?$
- 4.)  $h = 4\text{ft}$ ,  $b_1 = 7\text{ft}$ ,  $b_2 = 13\text{ft}$ ,  $A = ?$
- 5.)  $h = 5\text{km}$ ,  $b_1 = 11\text{km}$ ,  $b_2 = 17\text{km}$ ,  $A = ?$
- 6.)  $h = 1\text{nm}$ ,  $b_1 = 2\text{nm}$ ,  $b_2 = ?$ ,  $A = 5\text{nm}^2$
- 7.)  $h = 2\text{ }\mu\text{m}$ ,  $b_1 = ?$ ,  $b_2 = 5\text{ }\mu\text{m}$ ,  $A = 7\text{ }\mu\text{m}^2$
- 8.)  $h = ?$ ,  $b_1 = 4\text{ \AA}$ ,  $b_2 = 6\text{ \AA}$ ,  $A = 15\text{ \AA}^2$
- 9.)  $h = 4\text{ Tm}$ ,  $b_1 = 3\text{ Tm}$ ,  $b_2 = ?$ ,  $A = 20\text{ Tm}^2$
- 10.)  $h = 5\text{ m}$ ,  $b_1 = ?$ ,  $b_2 = 3\text{ m}$ ,  $A = 10\text{ m}^2$